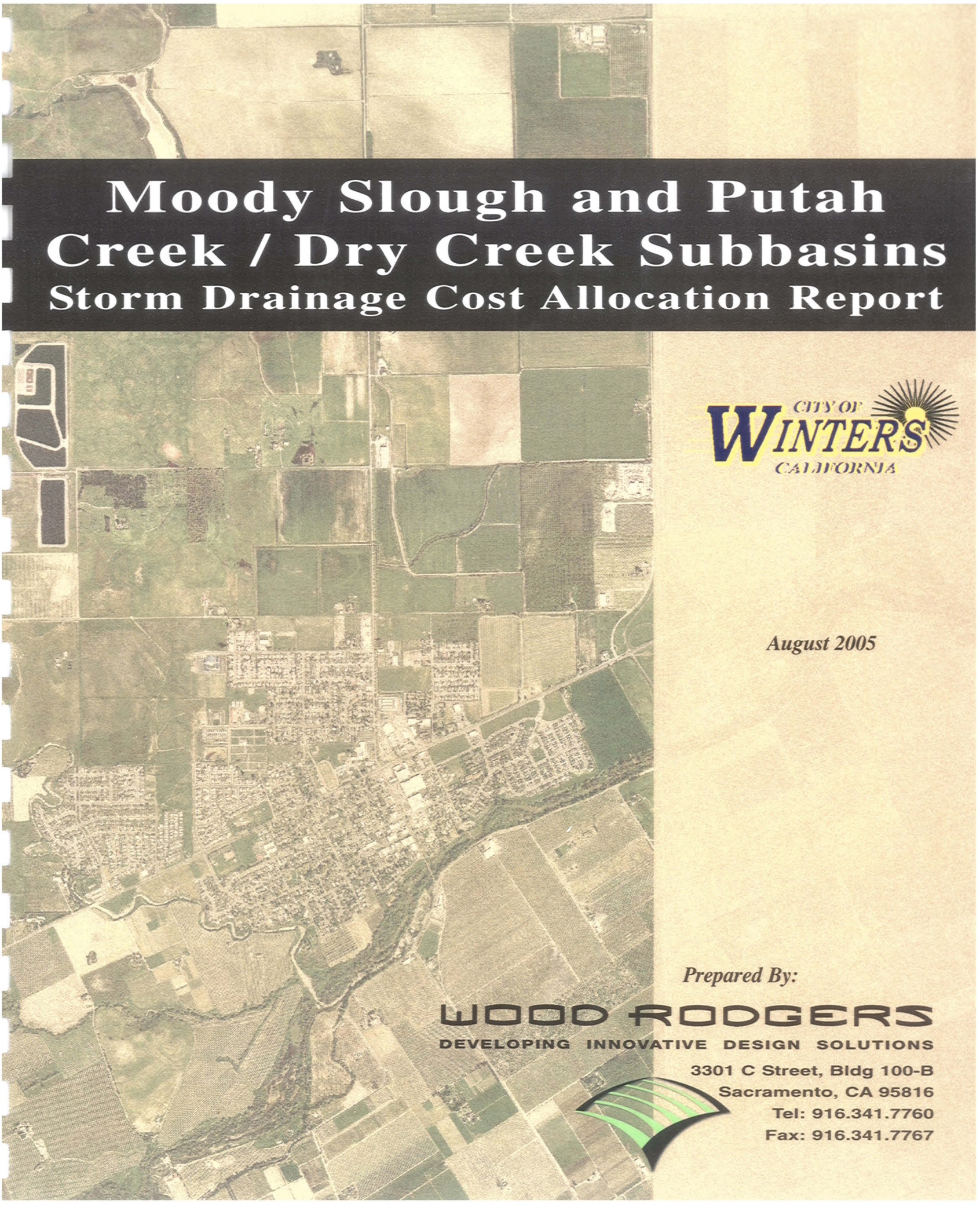


Moody Slough and Putah Creek / Dry Creek Subbasins
Storm Drainage Cost Allocation Report

CITY OF WINTERS
CALIFORNIA

August 2005

Prepared By:

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg 100-B
Sacramento, CA 95816
Tel: 916.341.7760
Fax: 916.341.7767

WOOD RODGERS

September 9, 2005

Mr. Nicholas Ponticello, P.E.
City of Winters
c/o Ponticello Enterprises
1216 Fortna Avenue
Woodland, California 95776

Dear Mr. Nick Ponticello:

Subject: City of Winters, Moody Slough Subbasin and Putah/Dry Creek Subbasins Drainage Reports and Moody Slough and Putah Cree/Dry Creek Subbasins Drainage Allocation Report – Submittal of Final Reports

Enclosed are the final reports that were prepared by Wood Rodgers, Inc. for the City of Winters (City). These reports were prepared to guide the City in implementing drainage infrastructure improvements to accommodate planned development. The reports (10 copies each) are entitled as follows:

1. *Moody Slough Subbasin Drainage Report*, August 2005
2. *Putah Creek / Dry Creek Subbasins Drainage Report*, August 2005
3. *Moody Slough and Putah Creek / Dry Creek Subbasins Storm Drainage Cost Allocation Report*, August 2005

Please note that the models for the hydrologic and hydraulic analyses are not included in the Moody Slough and Putah Creek / Dry Creek subbasin reports. Two CD's, which contain the modeling information for each respective report, are enclosed with this transmittal for the City's use. Wood Rodgers has noted in the reports that copies of this information can be provided upon request from the City.

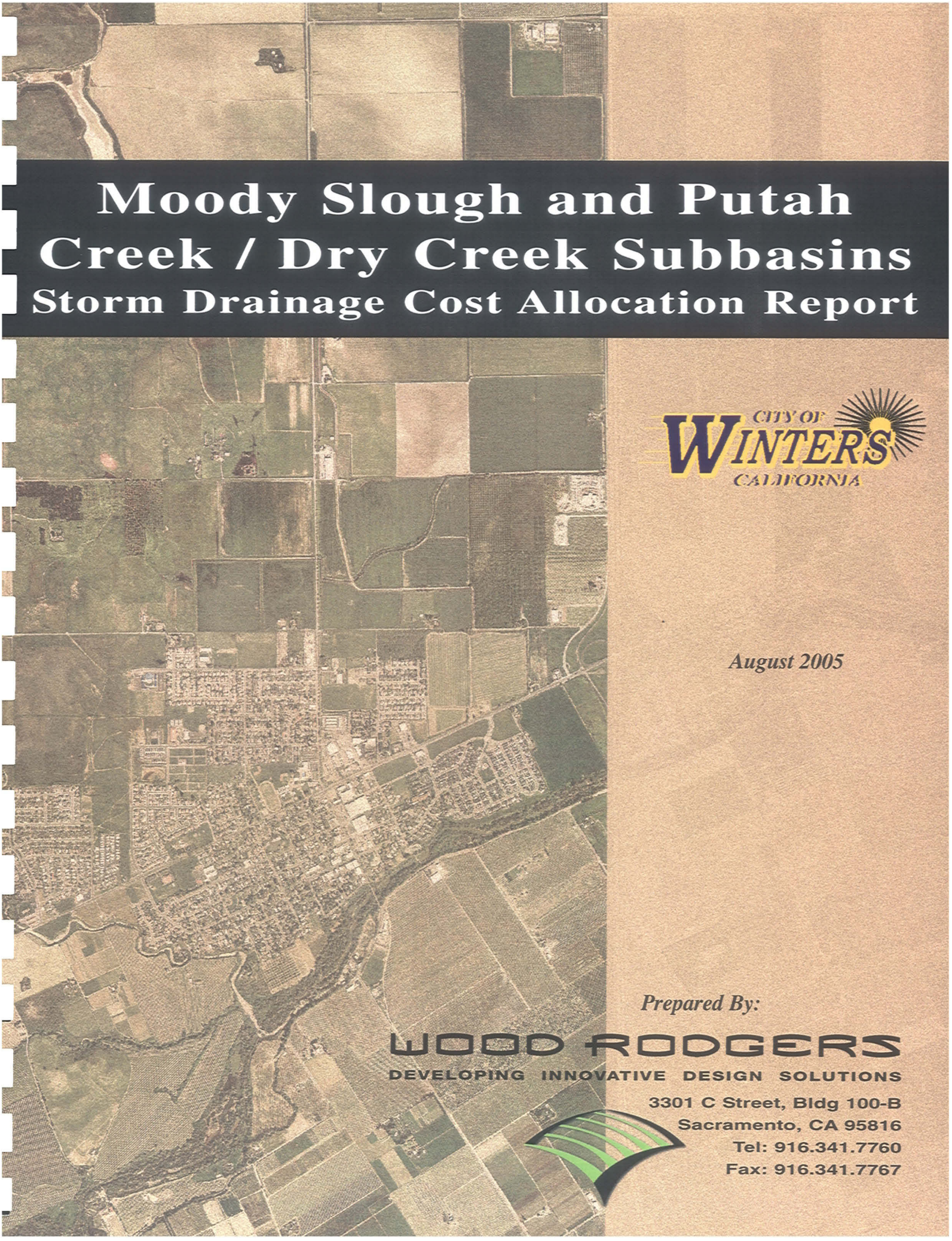
Wood Rodgers appreciates having the opportunity to assist the City with this assignment.

Sincerely,

Francis E. Borcalli, P.E.
Water Resources Department Manager

Enclosures: 10 Copies of Each Report
Two CD's

J:jobs\8220-MoodySlugh_PutahCreek-DryCreek\civil\docs\correspondence\Ponticell-Final-Report-Ltr_9-8-05.doc



Moody Slough and Putah Creek / Dry Creek Subbasins
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INTRODUCTION

As part of developing the Moody Slough Subbasin Drainage Report and the Putah Creek/Dry Creek Subbasins Drainage Report for the City of Winters (City), the City requested Wood Rodgers, Inc. to allocate the costs of the planned facilities according to zones of benefit. With corroboration from the City, the information presented in this report could provide a basis to assess drainage impact fees to land designated for development within the City's General Plan area.

APPROACH

Only land within the City's General Plan area would be allocated costs for storm drainage facilities. Although land outside the City's General Plan area may be contributing to sizing particular drainage facilities, costs are allocated to only land designated for development within the Plan area.

It is important to note that, at the direction of the City, land that is already developed within the City would not be allocated drainage impact fees for the construction of new facilities, even though there would be some indirect benefit to the land and the people by having a more comprehensive drainage solution for the region.

In addition, at the direction of the City, land within the Rancho Arroyo drainage district would not be allocated any portion of the cost of facilities to handle runoff from public land draining to the Putah Creek diversion channel. Similarly, land draining to the Putah Creek diversion channel would not be allocated any costs for public land impacts within the Rancho Arroyo drainage basin. From a drainage impact and cost allocation perspective, the Rancho Arroyo drainage basin would be considered separately.

Costs for facilities within the Rancho Arroyo drainage basin would not be used in calculating the fees for the General Plan flood overlay.

To facilitate the equitable allocation of costs for drainage facilities, land within the affected drainage sheds that is designated for development within the General Plan area was separated into drainage zones. The cost allocation zones represent land benefiting from a particular drainage facility or group of facilities. Accordingly, drainage facilities costs were allocated in

relation to respective drainage facilities. The eight cost allocation zones or zones of benefit are identified on Figure 1, and the facilities benefiting each zone are identified in Table 1.

The approach employed by Wood Rodgers to allocate costs is based upon land use and the relative contribution to storm runoff. For this purpose, runoff coefficients were used.

Although land designated either Public/Quasi Public (PQP), Open Space (OS), or Park Recreation (P-R or PR) contributes runoff, this land, which amounts to 55% (566 acres/1,033 acres) of the developable land, is treated as "exempt" and no costs are allocated to such land. Therefore, exempt land is not included in the allocation of costs. Roadways identified within the General Plan were treated similarly.

DRAINAGE FACILITIES COST

The estimated cost of drainage facilities as presented in the drainage reports for the Moody Slough Subbasin (August 2005) and the Putah/Dry Creek Subbasins (August 2005), were used for the cost allocation analysis. Presented in the Appendix is a copy of the storm drainage facilities costs for the respective subbasins.

COST ALLOCATION ANALYSIS

A determination of the cost allocation as discussed in the Approach requires a detailed breakdown of land use within the respective zones.

The City provided Wood Rodgers the most recent representation of land use (in digital format) for representing the City's General Plan. The areas for the respective land uses obtained from the digital files, provided the basis for determining land use areas within the City's respective drainage zones.

Land already developed or within the Rancho Arroyo drainage basin, within the respective zones, was removed from this analysis. These areas are discussed below under the description for each drainage zone.

There were no adjustments made to reflect the footprint (acreage) of drainage facilities presented in the drainage reports. The cost of land to construct the drainage facilities is included in the

opinion of probable cost for each drainage facility. The implementation of a drainage impact fee/credit program assumes the equitable handling of costs for the drainage facilities.

Drainage Zone 1

Drainage Zone 1 (DZ1) is located in the western portion of the Moody Slough subbasin and is described in the Moody Slough Drainage Report (as well as Zones 2-4). A specific issue worth noting in this report is the designation of runoff corridors located in DZ1. There is no cost identified in the Drainage Report for the land associated with runoff corridors (defined in the report) as these are presumed to be dedicated at no cost to the City by development. However, it is clearly identified that land with designated runoff corridors must preserve the corridor and use (or replace it) as "conduits" for collecting and conveying storm drainage through the property. Presented in Table 2 are the drainage impact fees for land within DZ1.

Drainage Zone 2

Drainage Zone 2 (DZ2) is located in the northern central portion of the Moody Slough subbasin adjacent to and east of DZ1. This land contains the three primary detention ponds that are proposed in the Moody Slough Subbasin Drainage Report, as well as the relocated Willow Canal, the Winters North Drain, and the Winters north levee along its northern boundary. The facilities that are needed to serve land within this zone are identified in Table 1. Presented in Table 3 are the drainage allocation costs for land within DZ2.

Drainage Zone 3

Drainage Zone 3 (DZ3) is currently entirely in a floodplain area where much of the Moody Slough runoff spills from Chickahominy Slough and ponds before flowing under and over Interstate 505. Once facilities in and adjacent to DZ2 and the Winters north levee are constructed, DZ3 could become fully isolated with the construction of a floodwall along Interstate 505, which prevents highway overflow from spilling back into the City. Land within DZ3 benefits from the Putah Creek diversion channel, however, it derives no benefit from the detention storage in DZ2, which regulates the peak flow conditions in the Putah Creek diversion channel. From a flood control perspective, DZ3 would be designed to drain runoff originating within the zone as quickly as possible, and earlier than the peak flow from DZ2. Presented in Table 4 are the drainage allocation costs for land within DZ3.

As previously noted, land currently developed within DZ3 will not be allocated any cost for the proposed storm drainage facilities. The amount of this land was estimated as eight acres in the heavy industrial area and five acres in the light industrial area.

Drainage Zone 4

Drainage Zone (DZ4) is located in the west and south portion of the Moody Slough subbasin between the existing City and Drainage Zone 1 and Zone 2. Land in this zone is planned to drain into two detention/water quality basins in DZ2, and would benefit by the Putah Creek diversion channel as well. This land is not protected directly by the Winters North Drain and levee, thus is not allocated any cost for these facilities. Presented in Table 5 are the allocated costs for land within DZ4.

Drainage Zone 5

Drainage Zone 5 (DZ5) is located to the north of State Highway 128 and is bordered by Interstate 505 on the east DZ3 on the north and the Putah Creek diversion channel on the west. The facilities and costs for facilities benefiting this drainage zone are defined in the Putah/Dry Creek Drainage Report. The northern portion of the Putah Creek diversion channel runs through it and would greatly improve drainage in the area. As in DZ3, the runoff from DZ5 under larger storm events should reach the Putah Creek diversion channel earlier in the storm and therefore the land within DZ5 is not benefiting by the detention ponds in DZ2.

There is an existing gasoline station located in an area designated as highway service commercial. A portion of this area (approximately 2.25 acres) was excluded from the allocation of drainage facilities costs.

Presented in Table 6 are the allocated costs for land within DZ5.

Drainage Zone 5A

While flooding land upstream within the Moody Slough subbasin is mitigated by the facilities outlined in the Moody Slough DMP, DZ5A is also receiving overland runoff from existing City land to the west, on the north side of State Highway 128. Therefore, a catchment and diversion facility is proposed along the western and southern boundary of DZ5 to direct overland flow

from urban land upstream to bypass the DZ5A water quality treatment facilities. It is recognized that the overland flow from upstream lands would occur later in the storm than direct runoff within DZ5, and the occurrence of such flow would only be during very large storm events (greater than 10-year recurrence), for which storm water quality treatment operations are not designed to be effective. While this flow could be routed through DZ5A and commingled with direct runoff from DZ5A, the size of the combined facility would likely be greater than a single pipe could convey. Overland flow would have to be routed through the streets or a second (parallel) pipe would have to be constructed, complicating on-site design with no real savings. It could then also be argued that DZ5A has taken on a peak flow timing that is more consistent with DZ2 and should therefore contribute to DZ2's detention. This timing would be primarily due to the upstream overflow runoff and not the direct DZ5A runoff.

Presented in Table 7 are the allocated costs for land within DZ5A.

Drainage Zone 5B

Drainage Zone 5B (DZ5B) is located between DZ4 and DZ5A and is planned to be connected to the existing City storm drain system that conveys runoff up to a 10-year event directly south to Putah Creek. This land is currently undeveloped; however, when it is developed it would be graded to direct runoff greater than the storm drain capacity to the east toward DZ5A. The overland flow would be collected and diverted through the facility outlined in DZ5A; therefore, DZ5B should contribute to its cost as well as the Putah Creek diversion channel. However, DZ5B is not benefiting by the on-site regional drainage facilities serving DZ5A and should not contribute to these facilities. It is feasible for this site to be graded to redirect overland runoff northward; however, it is assumed this would unnecessarily encumber this area with drainage costs providing little additional benefit. Presented in Table 8 are the allocated costs for land within DZ5B.

Drainage Zone 6

Drainage Zone 6 (DZ6) is located south of State Highway 128 and is bordered by Interstate 505 on the east and Putah Creek on the south, and is composed primarily of undeveloped land. DZ6 is similar to DZ5 in that it is proposed to drain directly to the Putah Creek diversion channel and has on-site water quality treatment, collecting upstream overflow as well. The two main differences between DZ6 and DZ5 is the location (lands south of Highway 128) and the

recommended configuration of the diversion flow commingling with the on-site flow before entering the Putah Creek diversion channel. As stated under DZ5, upstream overflow would only occur during larger storm events under which runoff exceeds the design requirement for storm water quality treatment. Presented in Table 9 are allocated costs for land within DZ6.

Drainage Zone 7

Drainage Zone 7 (DZ7) is located within the Rancho Arroyo Drainage Basin that is already assessed drainage impact fees by an ordinance adopted by the City Council. This drainage zone is hydrologically and hydraulically isolated from the rest of the City and has an existing floodplain (pond) identified on the latest Flood Insurance Rate Map (FIRM) published by the Federal Emergency Management Agency (FEMA). To our knowledge, there has been no Letter of Map Revision for any homes constructed recently within the basin.

The City determined this zone to have an adequate fee structure and even though the 2004 Drainage Master Plan identifies facilities to drain this area, the existing fee has been determined sufficient to construct all newly required facilities. Therefore, no further fee assessment is necessary under this effort.

RESULTS

The allocated costs, according to land use within the respective drainage zones, are summarized in Table 10.

Table 11 provides an overview of the existing developed land within drainage zones that are not contributing fees.

Table 12 provides a breakdown of drainage costs by facility and drainage zone to clarify the redistribution of exempt land costs to the remaining plan areas.

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Tables

Tables

TABLE 1

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

DRAINAGE ZONES BENEFITING FROM RESPECTIVE STORM DRAINAGE FACILITIES

Storm Drainage Facility[1]	Drainage Zone							
	1	2	3	4	5	5A	5B	6
Putah Creek Diversion Channel	X	X	X	X	X	X	X	X
Detention/Water Quality Pond #1	X	X		X				
Open Channel Connecting Ponds 1 & 2	X	X		X				
Detention/Water Quality Pond #2	X	X		X				
Detention/Water Quality Pond #3	X	X						
Water Quality Pond #4	X							
Water Quality Pond #5			X					
Winters North Drain		X	X					
Winters North Drain Ultimate Levee		X	X					
I-505 Floodwall			X		X			
Grant Street Interceptor						X	X	
Area 5 On-Site					X			
Area 5A On-Site						X		
Area 6 Facilities								X
Drainage Report	X	X	X	X	X	X	X	X
Future Drainage Report Update	X	X	X	X	X	X	X	X

[1]Storm drainage facilities are identified in the "Moody Slough Subbasin Drainage Report," August 2005; and the "Putah Creek/Dry Creek Subbasins Drainage Report," August 2005.

TABLE 2

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 1

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	47	1,869,846	40,031
Low Density Residential - 1.1 to 4.0 DU	12	540,145	43,630
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	0	0	0
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	0	0	0
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	252	0	0
Recreation/Parks	13	0	0
Open Space	0	0	0
Pond	0	0	0
TOTAL	325	2,409,991	-

TABLE 3

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 2

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	23	1,245,300	54,451
Medium Density Residential - 4.1 to 6.0 DU	47	3,004,684	63,659
Medium/High Density Residential - 6.1 to 10.0 DU	44	2,716,340	61,890
High Density Residential - 10.1 to 20.0 DU	4	227,198	62,936
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	6	429,351	68,151
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	0	0	0
Heavy Industrial	20	1,223,299	60,410
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public (Schools)	44	2,918,942	67,102
Public/Quasi-Public	4	0	0
Recreation/Parks	65	0	0
Open Space	117	0	0
Pond	0	0	0
TOTAL	374	11,765,113	-

TABLE 4

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 3

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	0	0	0
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	0	0	0
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	39	1,800,578	45,700
Heavy Industrial	8	363,654	43,761
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	0	0	0
Recreation/Parks	0	0	0
Open Space	0	0	0
Pond	0	0	0
TOTAL	48	2,164,232	-

TABLE 5

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 4

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	49	1,381,539	27,916
Medium Density Residential - 4.1 to 6.0 DU	14	451,144	33,027
Medium/High Density Residential - 6.1 to 10.0 DU	2	66,079	32,077
High Density Residential - 10.1 to 20.0 DU	21	684,515	32,304
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	4	155,810	35,331
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	0	0	0
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	33	0	0
Recreation/Parks	16	0	0
Open Space	4	0	0
Pond	0	0	0
TOTAL	143	2,739,087	-

TABLE 6

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 5

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	0	0	0
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	0	0	0
Highway Service Commercial	3	95,514	28,597
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	10	265,487	27,829
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	0	0	0
Recreation/Parks	0	0	0
Open Space	0	0	0
Pond	0	0	0
TOTAL	13	361,001	-

TABLE 7

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 5A

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	32	1,190,911	37,604
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	0	0	0
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	14	680,729	48,903
Light Industrial	0	0	0
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	0	0	0
Recreation/Parks	0	0	0
Open Space	14	0	0
Pond	0	0	0
TOTAL	59	1,871,640	-

TABLE 8

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 5B

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	2.4	59,787	25,441
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	0	0	0
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	0	0	0
Light Industrial	0	0	0
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	0	0	0
Public/Quasi-Public	0	0	0
Recreation/Parks	5	0	0
Open Space	0	0	0
Pond	0	0	0
TOTAL	7	59,787	-

TABLE 9

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

ALLOCATED COSTS - DRAINAGE ZONE 6

Land Use	Area (ac)	Cost,[1] ($)	Cost Per Acre ($/ac)
Rural Residential - 0.5 to 1.0 DU	0	0	0
Low Density Residential - 1.1 to 4.0 DU	0	0	0
Medium Density Residential - 4.1 to 6.0 DU	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	0	0
Neighborhood Commercial (Residential Allowance - 6.1 to 10.0 DU)	1	47,728	33,144
Highway Service Commercial	0	0	0
Central Business District	0	0	0
Office	0	0	0
Planned Commercial	10	337,400	33,472
Light Industrial	0	0	0
Heavy Industrial	0	0	0
Business/Industrial Park	0	0	0
Commercial/Business Park	53	1,747,538	32,738
Public/Quasi-Public	0	0	0
Recreation/Parks	0	0	0
Open Space	0	0	0
Pond	0	0	0
TOTAL	65	2,132,665	-

TABLE 10

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

SUMMARY OF ALLOCATED COSTS

Land Use	Allocated Costs, $/ac							
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 5A	Zone 5B	Zone 6
Rural Residential - 0.5 to 1.0 DU	40,031	0	0	0	0	0	0	0
Low Density Residential - 1.1 to 4.0 DU	43,630	54,451	0	27,916	0	37,604	25,441	0
Medium Density Residential - 4.1 to 6.0 DU	0	63,659	0	33,027	0	0	0	0
Medium/High Density Residential - 6.1 to 10.0 DU	0	61,890	0	32,077	0	0	0	0
High Density Residential - 10.1 to 20.0 DU	0	62,936	0	32,304	0	0	0	0
Neighborhood Commercial (Residential Allowance, 6.1 - 10.0 DU)	0	68,151	0	35,331	0	0	0	33,144
Highway Service Commercial	0	0	0	0	28,597	0	0	0
Central Business District	0	0	0	0	0	0	0	0
Office	0	0	0	0	0	0	0	0
Planned Commercial	0	0	0	0	0	48,903	0	33,472
Light Industrial	0	0	45,700	0	27,829	0	0	0
Heavy Industrial	0	60,410	43,761	0	0	0	0	0
Business/Industrial Park	0	0	0	0	0	0	0	0
Commercial/Business Park	0	0	0	0	0	0	0	32,738
Public/Quasi-Public	0	67,102	0	0	0	0	0	0
Recreation/Parks	0	0	0	0	0	0	0	0
Open Space	0	0	0	0	0	0	0	0
Pond	0	0	0	0	0	0	0	0

TABLE 11

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

EXISTING DEVELOPED LANDS WITHIN DRAINAGE ZONES

Lands Within DMP Drainage Zones Contributing Runoff and Not Allocated Costs								
	Drainage Zone							
	1	2	3	4	5	5A	5B	6
Acres	0	0	8	0	2.25	0	0	0

TABLE 12

CITY OF WINTERS
MOODY SLOUGH AND PUTAH CREEK / DRY CREEK SUBBASINS
STORM DRAINAGE COST ALLOCATION REPORT

STORM DRAINAGE FACILITIES COSTS ACCORDING TO DRAINAGE ZONE

Storm Drainage Facility[1]	Drainage Zone								Total, $
	1	2	3	4	5	5A	5B	6	
Putah Creek Diversion Channel	272,348	1,063,701	267,211	475,369	73,029	235,116	11,300	377,334	2,775,410
Detention/Water Quality Pond #1	672,439	2,623,620		1,180,751					4,476,810
Open Channel Connecting Ponds 1 & 2	72,137	281,455		126,668					480,260
Detention/Water Quality Pond #2	512,912	2,001,200		900,633					3,414,745
Detention/Water Quality Pond #3	571,672	2,224,118							2,795,790
Water Quality Pond #4	276,590								276,590
Water Quality Pond #5			212,475						212,475
Winters North Drain		3,327,147	833,163						4,160,310
Winters North Drain Ultimate Levee		119,313	29,877						149,190
I-505 Floodwall			790,215		216,790				1,007,005
Grant Street Interceptor						1,001,457	47,163		1,048,620
Area 5 On-Site					62,630				62,630
Area 5A On-Site						607,535			607,535
Area 6 Facilities								1,711,145	1,711,145
Drainage Report	14,719	57,489	14,442	25,692	3,947	12,707	611	20,393	150,000
Future Drainage Report Update	17,173	67,070	16,849	29,974	4,605	14,825	713	23,792	175,000
TOTAL	2,409,991	11,765,113	2,164,232	2,739,087	361,001	1,871,640	59,787	2,132,665	23,303,515

[1]Storm drainage facilities are identified in the "Moody Slough Subbasin Drainage Report," August 2005; and the "Putah Creek / Dry Creek Subbasins Drainage Report," August 2005.

WOOD RODGERS

DEVELOPING INNOVATIVE DESIGN SOLUTIONS

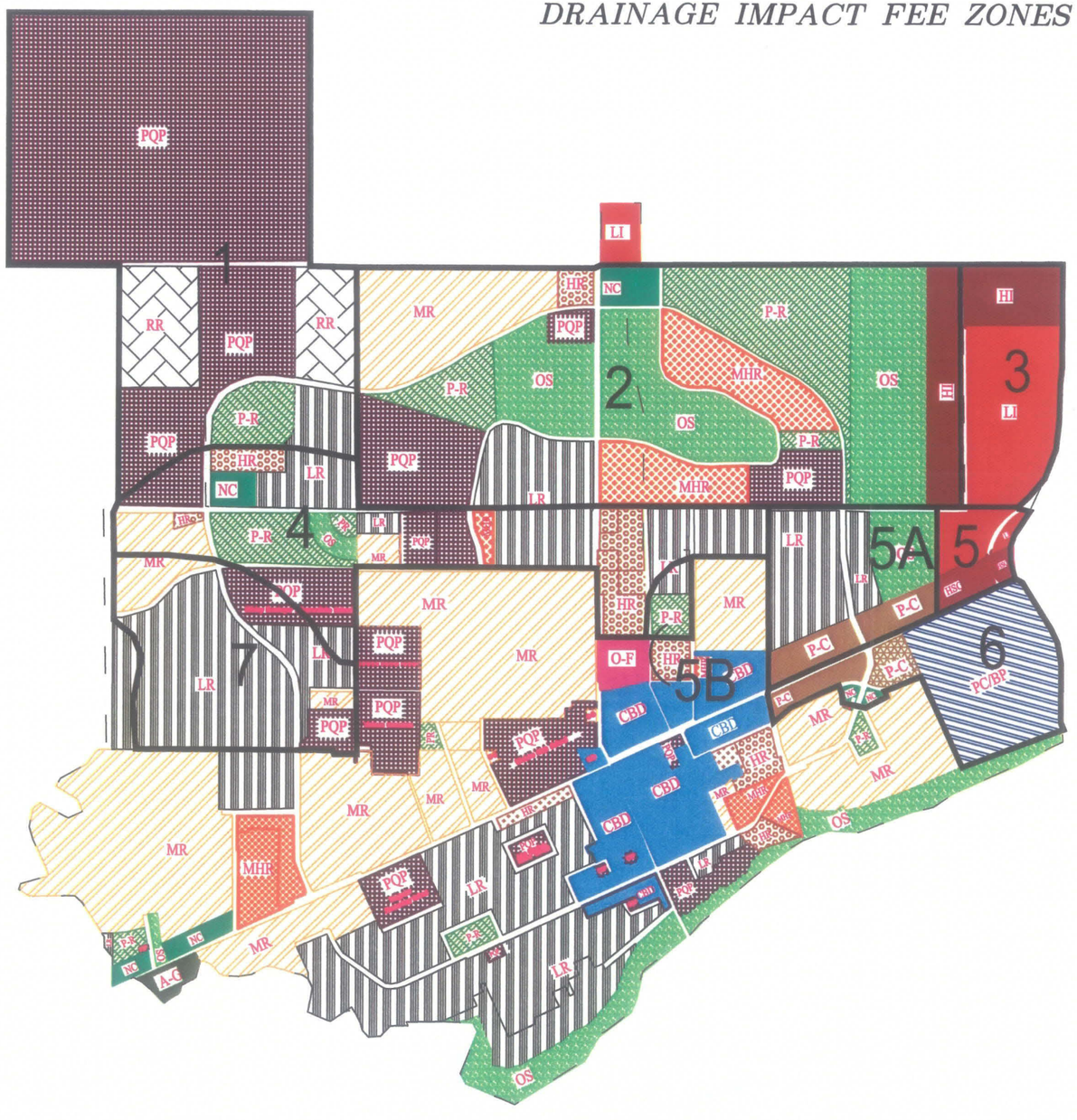
Figure

Figure

CITY OF WINTERS

STORM DRAINAGE COST ALLOCATION REPORT
MOODY SLOUGH AND PUTAH CREEK/DRY CREEK SUBBASINS

DRAINAGE IMPACT FEE ZONES



SCALE: 1" = 1500'

GENERAL PLAN LAND USE DIAGRAM

- AGRICULTURE (AG)
- RURAL RESIDENTIAL (RR)
- LOW-DENSITY RESIDENTIAL (LR)
- MEDIUM-DENSITY RESIDENTIAL (MR)
- MEDIUM/HIGH DENSITY (MHR)
- HIGH-DENSITY RESIDENTIAL (HR)
- NEIGHBORHOOD COMMERCIAL (NC)
- CENTRAL BUSINESS DISTRICT (CBD)
- HIGHWAY SERVICE COMMERCIAL (HSC)
- OFFICE (OF)
- PLANNED COMMERCIAL (PC)
- PLANNED COMMERCIAL BUSINESS PARK (PC/BP)
- LIGHT INDUSTRIAL (LI)
- HEAVY INDUSTRIAL (HI)
- PUBLIC/QUASI-PUBLIC (PQP)
- PARKS AND RECREATION (PR)
- OPEN SPACE (OS)
- URBAN LIMIT LINE
- CITY LIMITS

SOURCE: LANDUSE PROVIDED BY PONTICELLO ENTERPRISES

WOOD RODGERS
ENGINEERING • MAPPING • PLANNING • SURVEYING

FIGURE 1

WOOD RODGERS

DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Appendix

Appendix

CITY OF WINTERS
DRAINAGE REPORT - MOODY SLOUGH SUBBASIN

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

			Description	Quantity	Unit	Unit Cost, $	Total Cost, $
1.	Putah Creek Diversion[2]						
	a.	Land Acquistion					
		·	Fee	10	ac	10,075.00	101,800
		·	Acquisition Allowance	1	ls	25%	25,450
	b.	Channel Construction					
		·	Excavate and Load Into Trucks	100,273	cy	1.78	178,600
		·	Haul and Dump Excess Material	100,273	cy	1.15	115,600
		·	Spread, Compact, and Shape Excess Material	100,273	cy	1.47	147,100
		·	Construct Patrol/Access Roadways	1,770	tn	15.19	26,900
		·	Construct Fencing on Both Sides of Channel	6,100	lf	16.30	99,400
	c.	Highway 128 Road Crossing (Five 5'x8' Box Culverts)					
		·	Excavate and Load Into Trucks	5,355	cy	1.78	9,500
		·	Haul and Dump Excess Material	1,190	cy	1.15	1,400
		·	Spread, Compact, and Shape Excess Material	1,190	cy	1.47	1,700
		·	Reinforced Concrete Structure	557	cy	592.01	329,700
		·	Structural Backfill	4,162	cy	10.48	43,600
		·	Pavement Replacement	833	sy	45.06	37,500
		·	Traffic Control	1	ls	52,390.00	52,400
	d.	Upstream End - Public Road Crossing (Five 5'x8' Box Culverts)					
		·	Excavate and Load Into Trucks	5,355	cy	1.78	9,500
		·	Haul and Dump Excess Material	1,190	cy	1.15	1,400
		·	Spread, Compact, and Shape Excess Material	1,190	cy	1.47	1,700
		·	Reinforced Concrete Structure	557	cy	592.01	329,700
		·	Structural Backfill	4,162	cy	10.48	43,600
		·	Pavement Replacement	833	sy	45.06	37,500
		·	Traffic Control	1	ls	52,390.00	52,400
	e.	Outfall Structure					
		·	Excavate and Stockpile/Load Into Trucks	780	cy	1.78	1,400
		·	Haul and Dump Excess Material	420	cy	1.15	500
		·	Spread, Compact, and Shape Excess Material	420	cy	1.47	600
		·	Reinforced Concrete Structure	219	cy	592.01	129,600
		·	Structural Backfill	360	cy	10.48	3,800
Subtotal Putah Creek Diversion Improvements[3]							1,782,350
2.	Detention/Water Quality Pond #1						
	a.	Land Acquistion					
		·	Fee	29	ac	10,075.00	292,200
		·	Acquisition Allowance	1	ls	25%	73,050
	b.	Pond Construction					
		·	Excavate and Load Into Trucks	383,909	cy	1.78	683,800
		·	Haul and Dump Excess Material	383,909	cy	1.15	442,500
		·	Spread, Compact, and Shape Excess Material	383,909	cy	1.47	563,200
		·	Construct Perimeter Road	3,465	tn	15.19	52,600
	c.	Inlet Structure (Five 10'x5' Box Culverts)					
		·	Excavate and Load Into Trucks	2,585	cy	1.78	4,600
		·	Haul and Dump Excess Material	1,670	cy	1.15	1,900
		·	Spread, Compact, and Shape Excess Material	1,670	cy	1.47	2,400
		·	Reinforced Concrete Structure	605	cy	592.01	358,200
		·	Structural Backfill	915	cy	10.48	9,600
	d.	Outlet Control Structure					
		·	Obermeyer Control Gate	1	ls	249,500.00	249,500
		·	Obermeyer Control Gate Installation Cost	1	ls	15%	37,425
		·	Excavate and Load Into Trucks	1,186	cy	1.78	2,100
		·	Haul and Dump Excess Material	782	cy	1.15	900
		·	Spread, Compact, and Shape Excess Material	782	cy	1.47	1,100
		·	Reinforced Concrete Structure	263	cy	592.01	155,700
		·	Structural Backfill	404	cy	10.48	4,200
Subtotal Detention/Water Quality Pond #1							2,934,975

CITY OF WINTERS
DRAINAGE REPORT - MOODY SLOUGH SUBBASIN

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

	Description	Quantity	Unit	Unit Cost ($)	Total Cost ($)
3.	Detention/Water Quality Pond #2				
a.	Land Acquistion				
·	Fee	23	ac	10,075.00	231,700
·	Acquisition Allowance	1	ls	25%	57,925
b.	Pond Construction				
·	Excavate and Load Into Trucks	388,503	cy	1.78	692,000
·	Haul and Dump Excess Material	388,503	cy	1.15	447,800
·	Spread, Compact, and Shape Excess Material	388,503	cy	1.47	569,900
·	Construct Perimeter Road	2,228	tn	15.19	33,900
c.	Outlet Control Weir Structure				
·	Excavate and Load Into Trucks	200	cy	1.78	400
·	Haul and Dump Excess Material	100	cy	1.15	100
·	Spread, Compact, and Shape Excess Material	100	cy	1.47	100
·	Reinforced Concrete Structure	50	cy	592.01	29,600
·	Structural Backfill	100	cy	10.48	1,000
d.	Road Crossing (Five 6'x10' Box Culverts)				
·	Excavate and Load into Trucks	1,450	cy	1.78	2,600
·	Haul and Dump Excess Material	800	cy	1.15	900
·	Spread, Compact, and Shape Excess Material	800	cy	1.47	1,200
·	Reinforced Concrete Structure	244	cy	592.01	144,400
·	Structural Backfill	650	cy	10.48	6,800
·	Pavement Replacement	500	sy	45.06	22,500
	Subtotal Detention/Water Quality Pond #2				2,242,600
4.	Detention/Water Quality Pond #3				
a.	Land Acquistion				
·	Fee	14	ac	10,075.00	141,100
·	Acquisition Allowance	1	ls	25%	35,275
b.	Pond Construction				
·	Excavate and Load Into Trucks	234,238	cy	1.78	417,200
·	Haul and Dump Excess Material	234,238	cy	1.15	270,000
·	Spread, Compact, and Shape Excess Material	234,238	cy	1.47	343,600
·	Construct Perimeter Road	1,604	tn	15.19	24,400
c.	Road Crossing (Two 8'x10' Box Culverts)				
·	Excavate and Load into Trucks	2,070	cy	1.78	3,700
·	Haul and Dump Excess Material	350	cy	1.15	400
·	Spread, Compact, and Shape Excess Material	350	cy	1.47	500
·	Reinforced Concrete Structure	225	cy	592.01	133,200
·	Structural Backfill	1,725	cy	10.48	18,100
·	Pavement Replacement	500	sy	45.06	22,500
d.	Inlet Culverts (Under Proposed Roadway)				
·	24" Diameter (60' Length)	30	ea	4,337.89	130,100
	Open Channel Between Wetlands and Pond #3				
a.	Land Acquistion				
·	Fee	5	ac	10,075.00	51,500
·	Acquisition Allowance	1	ls	25%	12,875
b.	Channel Construction				
·	Excavate and Load Into Trucks	47,435	cy	1.78	84,500
·	Haul and Dump Excess Material	47,435	cy	1.15	54,700
·	Spread, Compact, and Shape Excess Material	47,435	cy	1.47	69,600
·	Construct Patrol/Access Roadways	1,608	tn	15.19	24,400
	Subtotal Detention/Water Quality Pond #3				1,457,600
5.	Water Quality Pond #4				
a.	Land Acquistion				
·	Fee	3	ac	10,075.00	26,200
·	Acquisition Allowance	1	ls	25%	6,550

CITY OF WINTERS
DRAINAGE REPORT - MOODY SLOUGH SUBBASIN

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

Description	Quantity	Unit	Unit Cost, $	Total Cost, $
b. Pond Construction				
· Excavate and Load Into Trucks	11,290	cy	1.78	20,100
· Haul and Dump Excess Material	11,290	cy	1.15	13,000
· Spread, Compact, and Shape Excess Material	11,290	cy	1.47	16,600
· Construct Perimeter Road	455	tn	15.19	6,900
c. Road Crossing (Two 5'x10' Box Culverts)				
· Excavate and Load into Trucks	560	cy	1.78	1,000
· Haul and Dump Excess Material	235	cy	1.15	300
· Spread, Compact, and Shape Excess Material	350	cy	1.47	500
· Reinforced Concrete Structure	115	cy	592.01	68,100
· Structural Backfill	325	cy	10.48	3,400
· Pavement Replacement	500	sy	45.06	22,500
Subtotal Water Quality Pond #4				185,100
6. Water Quality Pond #5				
a. Land Acquistion				
· Fee	2	ac	10,075.00	15,100
· Acquisition Allowance	1	ls	25%	3,775
b. Pond Construction				
· Excavate and Load Into Trucks	8,390	cy	1.78	14,900
· Haul and Dump Excess Material	8,390	cy	1.15	9,700
· Spread, Compact, and Shape Excess Material	8,390	cy	1.47	12,300
· Construct Perimeter Road	156	tn	15.19	2,400
c. 54" Diameter Siphon Pipeline				
· Excavate and Load Into Trucks	500	cy	1.78	900
· 54" Diameter Pipe	200	lf	314.34	62,900
· Spread, Compact, and Shape Excess Material	100	cy	1.47	100
· Reinforced Concrete Inlet and Outlet	30	cy	592.01	17,800
Subtotal Water Quality Pond #5				130,075
7. Open Channel Connecting Ponds 1 and 2				
a. Land Acquistion				
· Fee	2	ac	10,075.00	24,400
· Acquisition Allowance	1	ls	25%	6,100
b. Channel Construction				
· Excavate and Load Into Trucks	20,500	cy	1.78	36,500
· Haul and Dump Excess Material	20,500	cy	1.15	23,600
· Spread, Compact, and Shape Excess Material	20,500	cy	1.47	30,100
· Construct Patrol/Access Roadways	828	tn	15.19	12,600
d. Road Crossing (Five 6'x10' Box Culverts)				
· Excavate and Load Into Trucks	1,450	cy	1.78	2,600
· Haul and Dump Excess Material	800	cy	1.15	900
· Spread, Compact, and Shape Excess Material	800	cy	1.47	1,200
· Reinforced Concrete Structure	244	cy	592.01	144,400
· Structural Backfill	640	cy	10.48	6,700
· Pavement Replacement	500	sy	45.06	22,500
Subtotal Open Channel Connecting Ponds 1 and 2				311,000
8. Winters North Drain/Relocated Willow Canal				
a. Land Acquistion				
· Fee	27	ac	10,075.00	267,000
· Acquisition Allowance	1	ls	25%	66,750
b. Channel Construction				
· Excavate and Load Into Trucks	92,614	cy	1.78	165,000
· Haul and Dump Excess Material	92,614	cy	1.15	106,700
· Spread, Compact, and Shape Excess Material	45,935	cy	1.47	67,400
· Construct Patrol/Access Roadways	3,360	tn	15.19	51,000
· Fencing (Willow Canal Only)	3,500	lf	13.62	47,700
· Concrete Lining (Willow Canal Only)	2,550	lf	36.67	93,500
· Willow Canal Extension (54" Pipeline Under Proposed Roadway)	800	lf	314.34	251,500

CITY OF WINTERS
DRAINAGE REPORT - MOODY SLOUGH SUBBASIN

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

Description	Quantity	Unit	Unit Cost, $	Total Cost, $
c. Pipeline Construction				
· Excavate and Load Into Trucks	4,282	cy	1.78	7,600
· Haul and Dump Excess Material	4,282	cy	1.15	4,900
· Spread, Compact, and Shape Excess Material	2,265	cy	1.47	3,300
· Willow Canal 54"Pipeline	2,580	lf	314.34	811,000
· Manholes - 72" Diameter	3	ea	2,923.36	8,800
d. County Road 89 Crossing (Four 8'x6' Box Culverts)				
· Excavate and Load Into Trucks	1,090	cy	1.78	1,900
· Haul and Dump Excess Material	450	cy	1.15	500
· Spread, Compact, and Shape Excess Material	450	cy	1.47	700
· Reinforced Concrete Structure	244	cy	592.01	144,400
· Structural Backfill	640	cy	10.48	6,700
· Pavement Replacement	267	sy	45.06	12,000
· Traffic Control	1	ls	20,956.00	21,000
e. Levee Improvements				
(1) Clear and Grub for Base				
· Stripping and Vegetation (6")	21,860	cy	0.84	18,300
· Subexcavation and Recompaction (Inspection Trench)	21,500	cy	2.83	60,800
(2) Fill for New Embankment				
· Haul and Dump On-Site Dry Material	0	cy	1.15	0
· Compact and Shape On-Site Fill Material	46,679	cy	6.00	280,300
f. Siphon/Spill Structure (WC Under Winters North Drain Near CR 89)				
· Excavate and Load Into Trucks	500	cy	1.78	900
· 54" Diameter Pipe	156	lf	314.34	49,000
· Spread, Compact, and Shape Excess Material	500	cy	1.47	700
· Reinforced Concrete Inlet and Outlet	50	cy	592.01	29,600
· 54" Slide Gate	1	ls	10,478.00	10,500
g. Siphon Structure (WC Pond #1 inlet box structure)				
· Excavate and Load Into Trucks	1,011	cy	1.78	1,800
· 54" Diameter Pipe	150	lf	314.34	47,200
· Spread, Compact, and Shape Excess Material	109	cy	1.47	200
· Reinforced Concrete Inlet and Outlet	50	cy	592.01	29,600
h. Siphon Structure (Under Proposed Roadway)				
· Excavate and Load Into Trucks	500	cy	1.78	900
· 54" Diameter Pipe	120	lf	314.34	37,700
· Spread, Compact, and Shape Excess Material	500	cy	1.47	700
· Reinforced Concrete Inlet and Outlet	30	cy	592.01	17,800
Subtotal Winters North Drain Relocated Willow Canal				2,733,500
9. Winters North Drain Ultimate Levee				
a. Land Acquistion				
· Fee	2	ac	10,075.00	22,200
· Acquisition Allowance	1	ls	25%	5,550
b. Flood Barrier at Frontage Road				
· Reinforced Concrete Structure	35	cy	592.01	20,700
· Structural Backfill	16	cy	10.48	200
· Pavement Replacement	100	sy	45.06	4,500
c. Levee Improvements				
(1) Clear and Grub for Base				
· Stripping and Vegetation (6")	741	cy	0.84	600
· Subexcavation and Recompaction (Inspection Trench)	1,972	cy	2.83	5,600
(2) Fill for New Embankment				
· Haul and Dump On-Site Dry Material	6,195	cy	1.15	7,100
· Compact and Shape On-Site Fill Material	6,195	cy	6.00	37,200
Subtotal Winters North Drain Ultimate Levee				103,650

CITY OF WINTERS
DRAINAGE REPORT - MOODY SLOUGH SUBBASIN

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

Description	Quantity	Unit	Unit Cost, $	Total Cost, $
10. I-505 Floodwall				
a. Land Acquistion				
· Fee	2	ac	10,075.00	16,100
· Acquisition Allowance	1	ls	25%	4,025
b. Pond Construction				
· Excavate and Load Into Trucks	7,845	cy	1.78	14,000
· Haul and Dump Excess Material	1,162	cy	1.15	1,300
· Spread, Compact, and Shape Excess Material	1,162	cy	1.47	1,700
· Structural Backfill	6,683	cy	10.48	70,000
· Reinforced Concrete Wall	895	cy	592.01	529,800
Subtotal I-505 Floodwall				636,925
Subtotal Ultimate Drainage Improvements (Includes Land Acquisition)				12,500,350
Land Acquisition Costs[3]				1,486,625
Subtotal Ultimate Drainage Improvements (Does Not Include Land Acquisition)				11,013,725
Contingencies (25%)				2,853,431
Administration and Engineering (35%)				3,994,804
TOTAL ULTIMATE FACILITIES COST (Includes Land Acquisition Costs)				19,348,586

[1]Unit costs are based upon 2004 price levels.

[2]Putah Creek Diversion Improvements are shared by land outside of the Moody Slough subbasin. Refer to the report prepared by Wood Rodgers, Inc., entitled, "Moody Slough and Putah Creek / Dry Creek Subbasins Storm Drainage Cost Allocation Report," dated August 2005, for cost-sharing details.

[3]Land acquisition cost does not include runoff corridor acquisition. It is assumed either existing rights-of-way or easements are in place or that land will be dedicated.

CITY OF WINTERS
DRAINAGE REPORT - PUTAH CREEK / DRY CREEK SUBBASINS

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

	Description	Quantity	Unit	Unit Cost	Total Cost
1.	Rancho Arroyo Detention/Water Quality Pond Improvement Costs				
a.	Pump Station (Includes Back-up Pumps)	5	cfs	20,150.00	90,675
b.	48" Diameter RCP Trunk Pipe to Rancho Arroyo Detention/Water Quality Pond	1,515	lf	180.22	273,000
	Manholes				
	· 72" Diameter	3	ea	2,923.36	8,800
	Subtotal Rancho Arroyo Detention/Water Quality Pond Improvements				372,475
2.	Putah Creek Detention/Water Quality Pond No. 1				
a.	Land Acquistion				
	· Fee	1	ac	10,075.00	9,400
	· Acquisition Allowance	1	ls	25%	2,350
b.	Pond Construction				
	· Excavate and Load Into Trucks	5,347	cy	1.78	9,500
	· Haul and Dump Excess Material	5,347	cy	1.15	6,200
	· Spread, Compact, and Shape Excess Material	5,347	cy	1.47	7,800
	· Construct Perimeter Road	343	tn	15.19	5,200
c.	Outlet Control Weir Structure				
	· Excavate and Load Into Trucks	39	cy	1.78	100
	· Haul and Dump Excess Material	39	cy	1.15	0
	· Spread, Compact, and Shape Excess Material	39	cy	1.47	100
	· Riprap - Weir Construction	35	tn	41.91	1,500
	· Grout - Weir Construction	4	cy	366.73	1,400
	Subtotal Northeast Detention/Water Quality Pond Improvements				43,150
3.	Putah Creek Detention/Water Quality Pond No. 2				
a.	Land Acquistion				
	· Fee	2	ac	10,075.00	18,700
	· Acquisition Allowance	1	ls	25%	4,675
b.	Pond Construction				
	· Excavate and Load Into Trucks	17,671	cy	1.78	31,500
	· Haul and Dump Excess Material	17,671	cy	1.15	20,400
	· Spread, Compact, and Shape Excess Material	17,671	cy	1.47	25,900
	· Construct Perimeter Road	516	tn	15.19	7,800
c.	36" Diameter RCP Trunk Pipes	1,321	lf	121.54	160,600
	Manholes				
	· 60" Diameter	4	ea	2,923.36	11,700
d.	Outlet Structure at Pond From 36" Trunk Pipes	2	ea	5,239.00	10,500
e.	Outlet Control Weir Structure			0.00	
	· Excavate and Load Into Trucks	111	cy	1.78	200
	· Haul and Dump Excess Material	111	cy	1.15	100
	· Spread, Compact, and Shape Excess Material	111	cy	1.47	200
	· Riprap - Weir Construction	83	tn	41.91	3,500
	· Grout - Weir Construction	9	cy	366.73	3,300
f.	48" Pipe Inlet Structure				
	· Excavate and Load Into Trucks	41	cy	1.78	100
	· Haul and Dump Excess Material	41	cy	1.15	0
	· Spread, Compact, and Shape Excess Material	41	cy	1.47	100
	· Reinforced Concrete Structure	1	ea	9,472.11	9,500
g.	48" Diameter RCP Outlet Pipe to Putah Creek Diversion	426	lf	180.22	76,800
	Manholes				
	· 72" Diameter	1	ea	2,923.36	2,900
	Subtotal Northwest Detention/Water Quality Pond Improvements				366,175
4.	Grant Street Interceptor				
a.	Open Channel				
	· Land Acquisition Fee	1	ac	10,075.00	12,400
	· Acquisition Allowance	1	ls	25%	3,100
b.	Channel Construction				
	· Excavate and Load Into Trucks	1,700	cy	1.78	3,000
	· Haul and Dump Excess Material	1,700	cy	1.15	2,000
	· Spread, Compact, and Shape Excess Material	1,700	cy	1.47	2,500
	· Construct Patrol/Access Roadways	766	tn	15.19	11,600
c.	60" Diameter RCP	2,269	lf	249.38	565,800
	Manholes				
	· Saddle	8	ea	5,857.20	46,900

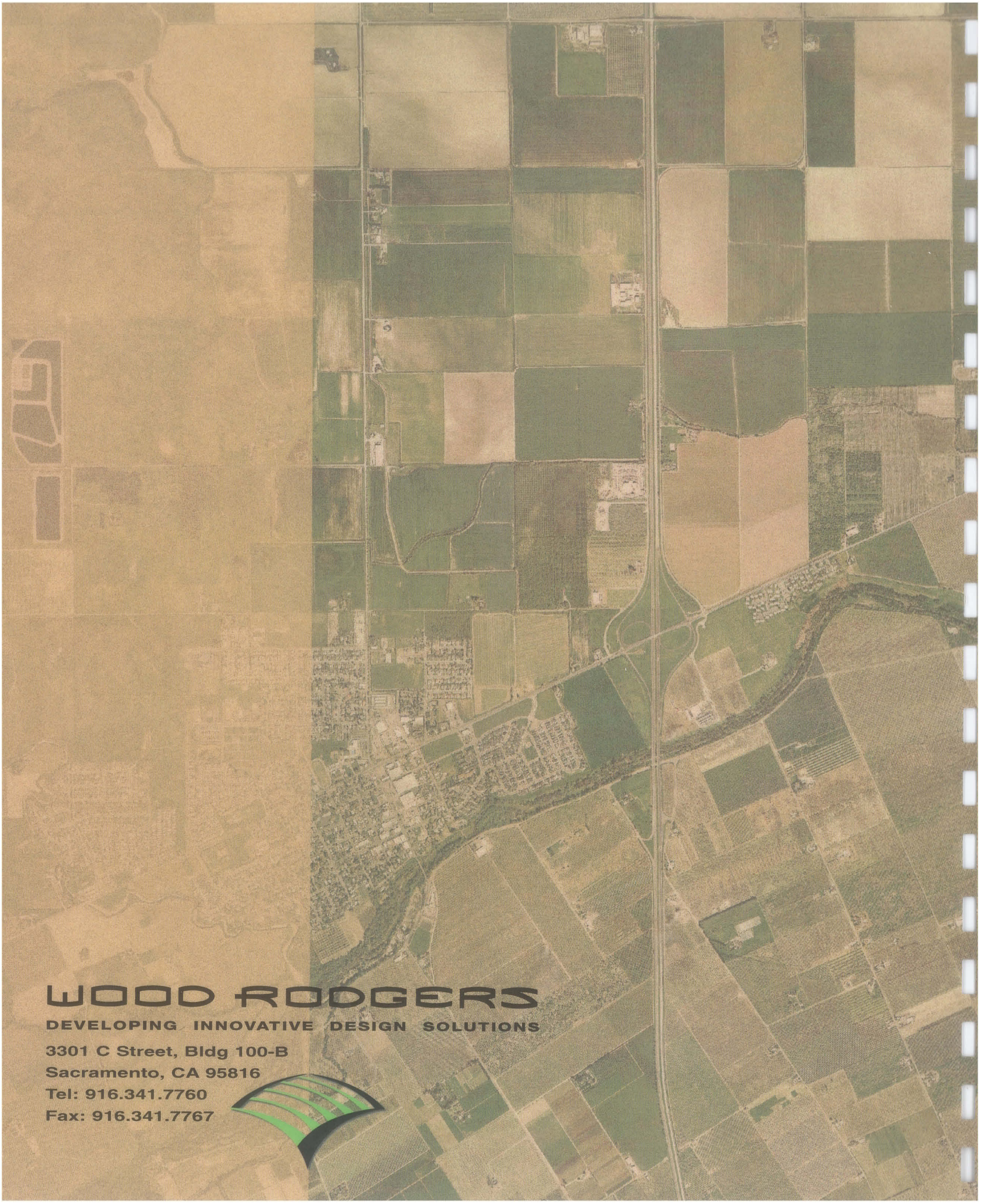
CITY OF WINTERS
DRAINAGE REPORT - PUTAH CREEK / DRY CREEK SUBBASINS

OPINION OF PROBABLE COSTS[1]
ULTIMATE CONDITIONS

	Description	Quantity	Unit	Unit Cost, $	Total Cost, $
d.	Construction of Inlet Structure at 60" Pipe	1	ea	8,749.13	8,700
e.	Outlet Structure at Putah Creek Diversion	1	ea	5,239.00	5,200
	Subtotal Grant Street Interceptor				66,200
5.	Putah Creek Detention/Water Quality Pond No. 3				
a.	Land Acquistion				
	· Fee	3	ac	10,075.00	29,000
	· Acquisition Allowance	1	ls	25%	7,250
b.	Pond Construction				
	· Excavate and Load Into Trucks	43,761	cy	1.78	77,900
	· Haul and Dump Excess Material	43,761	cy	1.15	50,400
	· Spread, Compact, and Shape Excess Material	43,761	cy	1.47	64,200
	· Construct Perimeter Road	582	tn	15.19	8,800
c.	Storm Drain Pipes				
	36" Diameter RCP Trunk Pipes	795	lf	121.54	96,600
	66" Diameter RCP	1,858	lf	288.15	535,400
	Manholes				
	· 60" Diameter	6	ea	2,923.36	17,500
	· Saddle	3	ea	5,857.20	17,600
d.	Outlet Structure at Pond From Trunk Pipes	2	ea	5,239.00	10,500
e.	Outlet Control Weir Structure				
	· Excavate and Load Into Trucks	1,054	cy	1.78	1,900
	· Haul and Dump Excess Material	1,054	cy	1.15	1,200
	· Spread, Compact, and Shape Excess Material	1,054	cy	1.47	1,500
	· Riprap - Weir Construction	385	tn	41.91	16,100
	· Grout - Weir Construction	42	cy	366.73	15,400
f.	66" Pipe Inlet Structure				
	· Excavate and Load Into Trucks	39	cy	1.78	100
	· Haul and Dump Excess Material	39	cy	1.15	0
	· Spread, Compact, and Shape Excess Material	39	cy	1.47	100
	· Reinforced Concrete Structure	1	ea	10,373.22	10,400
	Subtotal Southwest Detention/Water Quality Pond Improvements				961,850
6.	Putah Creek Detention/Water Quality Pond No. 4				
a.	Land Acquistion				
	· Fee	2	ac	10,075.00	18,700
	· Acquisition Allowance	1	ls	25%	4,675
b.	Pond Construction				
	· Excavate and Load Into Trucks	21,147	cy	1.78	37,700
	· Haul and Dump Excess Material	21,147	cy	1.15	24,400
	· Spread, Compact, and Shape Excess Material	21,147	cy	1.47	31,000
	· Construct Perimeter Road	421	tn	15.19	6,400
c.	Outlet Control Weir Structure				
	· Excavate and Load Into Trucks	205	cy	1.78	400
	· Haul and Dump Excess Material	205	cy	1.15	200
	· Spread, Compact, and Shape Excess Material	205	cy	1.47	300
	· Riprap - Weir Construction	76	tn	41.91	3,200
	· Grout - Weir Construction	8	cy	366.73	3,000
	Subtotal Southeast Detention/Water Quality Pond Improvements				129,975
	Subtotal Ultimate Facilities (Includes Land Acquisition Costs)				2,557,525
	Land Acquisition Costs				109,500
	Subtotal Ultimate Facilities (Does Not Include Land Acquisition Costs)				2,448,025
	Construction Contingencies (25%)				612,006
	Administration and Engineering (35%)				856,809
	TOTAL ULTIMATE FACILITIES COST (Includes Land Acquisition Costs)[2]				3,917,340

[1]Unit costs are based upon 2004 price levels.

[2]Putah Creek diversion improvements, totaling $2,775,410, are shared by land in the Moody Slough subbasin. Refer to the report prepared by Wood Rodgers, Inc., entitled, "Moody Slough and Putah Creek / Dry Creek Subbasins Storm Drainage Cost Allocation Report," dated August 2005, for cost-sharing details.



WOOD RODGERS

DEVELOPING INNOVATIVE DESIGN SOLUTIONS

3301 C Street, Bldg 100-B
Sacramento, CA 95816
Tel: 916.341.7760
Fax: 916.341.7767